be referred with much probability to the particular way in which our earth developed into a member of our solar system. If this be so it may be that on our earth only these blanks occur, and not generally throughout the universe.

What comes after uranium? I should consider that there is little prospect of the existence of an element much lower than this. Look at the vertical line of temperature slowly sinking from the upper to the lower part of the curve; the figures representing the scale of atomic weights may be also supposed to represent, inversely, the scale of a gigantic pyrometer dipping into the cauldron where suns and worlds are in process of formation. Our thermometer shows us that the heat has been sinking gradually, and, *pari passu*, the elements formed have increased in density and atomic weight. This cannot go on for an indefinite extent. Below the uranium point the temperature may be so reduced that some of the earlier formed elements which have the strongest affinities are able to enter into combination among themselves, and the result of the next fall in temperature will then be—instead of elements lower in the scale than uranium—the combination of oxygen with hydrogen, and the formation of those known compounds the dissociation of which is not beyond the powers of our terrestrial sources of heat.

Let us now turn to the upper portion of the scheme. With hydrogen of atomic weight = 1, there is little room for other elements, save perhaps for hypothetical helium. But what if we get "through the looking-glass," and cross the zero-line in search of new principles—what shall we find the other side of zero? Dr. Carnelley asks for an element of negative atomic weight; here is ample room and verge enough for a shadow series of such unsubstantialities. Helmholtz says that electricity is probably as atomic as matter:[1] is electricity one of the negative elements, and the luminiferous ether another? Matter, as we now know it, does not here exist; the forms of energy which are apparent in the motions of matter are as yet only latent possibilities. A substance of negative weight is not inconceivable.[2] But can we form a clear conception of a body which combines with other bodies in proportions expressible by negative quantities?

A genesis of the elements such as is here sketched out would not be confined to our little solar system, but would probably follow the same general sequence of events in every centre of energy now visible as a star.

Before the birth of atoms to gravitate towards one another, no pressure could be exercised; but at the outskirts of the fire-mist sphere, within which all is *protyle*—at the shell on which the tremendous forces involved in the birth of a chemical element exert full sway—the fierce heat would be accompanied by gravitation sufficient to keep the newly-born elements from flying off into space. As temperature increases expansion and molecular motion increase, molecules tend to fly asunder, and their chemical affinities become deadened; but the enormous pressure of the gravitation of the mass of atomic matter outside what I may for brevity call the birth-shell would counteract this action of heat.

Beyond this birth-shell would be a space in which no chemical action could take place, owing to the temperature there being above what is called the dissociation point for compounds. In this space the lion and the lamb would lie down together; phosphorus and oxygen would mix without union; hydrogen and chlorine would show no tendency to closer bonds; and even fluorine, that energetic gas which chemists have only isolated within the last month or two, would float about free and uncombined.

Outside this space of free atomic matter would be another shell, in which the formed chemical elements would have cooled down to the combination-point, and the sequence of events so graphically described by Mr. Mattieu Williams in "The Fuel of the Sun" would now take place, culminating in the solid earth and the commencement of geological time.

And now I must draw to a close, having exhausted not indeed my subject, but the time I may reasonably occupy. We have glanced at the difficulty of defining an element; we have noticed too the revolt of many leading physicists and chemists against the ordinary acceptation of the term element. We have weighed the improbability of their eternal self-existence, or their origination by chance. As a remaining alternative we have suggested their origin by a process of evolution like that of the heavenly bodies according to Laplace, and the plants and animals of our globe according to Lamarck, Darwin, and Wallace. In the general array of the elements, as known to us, we have seen a striking approximation to that of the organic world. In lack of direct evidence of the decomposition of any element, we have sought and found indirect evidence. We have taken into consideration the light thrown on this subject by Prout's law, and by the researches of Mr. Lockyer in solar spectroscopy. We have reviewed the very important evidence drawn from the distribution and collocation of the elements in the crust of our earth. We have studied Dr. Carnelley's weighty argument in favour of the compound nature of the so-called elements from their analogy to the compound radicals. We have next glanced at the view of the genesis of the elements; and, lastly, we have reviewed a scheme of their origin suggested by Prof. Reynolds's method of illustrating the periodic classification.

Summing up all the above considerations we cannot, indeed, venture to assert positively that our so-called elements have been evolved from one primordial matter; but we may contend that the balance of evidence, I think, fairly weighs in favour of this speculation.

This, then, is the intricate question which I have striven to unfold before you, a question that I especially commend to the young generation of chemists, not only as the most interesting, but the most profoundly important, in the entire compass of our science.

I say deliberately and advisedly the *most interesting*. The doctrine of evolution, as you well know, has thrown a new light upon and given a new impetus to every department of biology, leading us, may we not hope, to anticipate a corresponding wakening light in the domain of chemistry?

I would ask investigators not necessarily either to accept or to reject the hypothesis of chemical evolution, but to treat it as a provisional hypothesis; to keep it in view in their researches, to inquire how far it lends itself to the interpretation of the phenomena observed, and to test experimentally every line of thought which points in this direction. Of the difficulties of this investigation none can be more fully aware than myself. I sincerely hope that this my imperfect attempt may lead some minds to enter upon the study of this fundamental chemical question, and to examine closely and in detail what I, as if amidst the clouds and mists of a far distance, have striven to point out.

NOTES

A Reuter's telegram dated Grenada, August 29, states that during the solar eclipse of that morning good photometric observations were made by Prof. Thorpe. The light during the middle of totality was less than from the full moon. We learn from later telegrams dated Grenada, August 31, that the eclipse of the sun has been well observed by the British Astronomical Expedition, and that in the observations taken it was noticed that the corona extended nearly two diameters from the sun, and exhibited a feathery structure at the poles. Good photographs have been obtained of the coronal spectrum in the blue end. The spectrum was similar to that of the eclipse of 1883, observed on the Caroline Islands.

The celebrations connected with the Chevreul centenary took place in Paris on Tuesday last. The first demonstration was that of the National Society of Agriculture, to which M. Chevreul was elected member forty-six years ago, and of which he is elected President every alternate year. A commemoration medal was struck by the same Society. At three o'clock M. Chevreul received the congratulations of the members of the Academy of Sciences. The principal ceremony of the day was the unveiling of the statue of M. Chevreul in the hall of the new Museum at the Jardin des Plantes. The walls of the room, which are of vast dimensions, were hung with red velvet, and decorated with Gobelins tapestry and flowers. Spaces were reserved for Senators, Deputies, members of the Diplomatic Corps, and other distinguished persons. M. Goblet, Minister of Public Instruction, sat on M. Chevreul's right, and M. Floquet on his left. M. Frémy, the Director of the Museum, addressing M. Chevreul, said that the professors of the Museum, anticipating the future, had presented to him this statue. He then referred to the work of M. Chevreul in various branches of science, mainly in chemistry, and the results of his discoveries in industry. M. Zeller, President of the five Academies, M. Brock, representing the three Academies of Science of Scandinavian countries, M. Boscha, delegate of the Agricultural Society of Moscow, and the Italian Ambassador, also offered their congratulations to the venerable *savant*. The last speaker was the Minister of Public Instruction, who spoke, on behalf of the State, of the many ties which connected the great professor and chemist with the Ministry of Public Instruction. "The century which precedes our time," said M. Goblet, "belonged above all to science. What gave it its true character was the recent rise of scientific research, pursuing in the study of Nature the means of extending the domain of human power. Amongst the various branches of science, that to which M. Chevreul devoted himself—chemistry—is certainly one of the most fruitful, and one of those which owes most to French genius. Thanks to great French chemists and to M. Chevreul, France marches in the foremost rank of the nations which modern science guides." A banquet was given in the evening at the Hôtel de Ville. Several Ministers of State were present. The toast of M. Chevreul's health was proposed by M. Floquet, and supported by the Minister of Public Instruction. The festival which followed was very brilliant, ending with a torchlight procession, in which two squadrons of cuirassiers and a considerable body of infantry with several bands took part. Various Societies, all the members carrying Chinese lanterns, also joined the procession, which marched from the Hôtel de Ville through the principal streets and boulevards to the Place de la République. The streets through which the procession passed were thronged with dense masses of spectators.

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[1] "If we accept the hypothesis that the elementary substances are composed of atoms, we cannot avoid concluding that electricity also, positive as well as negative, is divided into definite elementary portions, which behave like atoms of electricity."—Helmholtz, Faraday Lecture, 1881.

[2] "I can easily conceive that there are plenty of bodies about us not subject to this intermutual action, and therefore not subject to the law of gravitation."—Sir George Airy, "Faraday's Life and Letters," vol. ii. p. 354.

On the 28th ult. His Excellency Tcheou Meou-Ki, Director of the Chinese Mission of Public Instruction, paid a visit, with the mandarins attached to his person, to M. Chevreul at his house. He handed to the illustrious chemist a Chinese document expressing in old characters every wish for his happiness and long life. It appears that there is living at this moment in China a Chinese *savant* who at the age of 100 years has just passed his examinations and been admitted a member of the highest academy of the mandarins. The interpreter explained to M. Chevreul that his Chinese visitors considered the fact that two *savants* a hundred years of age were living, one in France and the other in China, was a link connecting the learning of the two countries. When the Chinese Mission had retired, M. Chevreul received a deputation of the inhabitants of the Rue Chevreul, who presented him with a bouquet.

The last number of *La Nature* contains a biographical sketch, with several portraits, of M. Chevreul, from which it appears that he was born at Angers on August 31, 1786, his father being a physician and surgeon. It is noticeable that the father reached the age of ninety-one, and the mother died aged ninety-three. M. Chevreul as a lad witnessed some of the scenes of the conflict in La Vendée, and he saw the guillotine at work in Angers. The old University of the town having been swept away by the Revolution, he received his early education at the Central School of the place. He left this at the age of seventeen, and urned towards Paris, which was at that time peculiarly fortunate in possessing as teachers and professors eminent men in every branch of science. Fourcroy, the Professor of Chemistry at the College of France, was engaged in improving higher education, and left the work of his Chair largely to his demonstrator, Vauquelin, of whom Dumas said that he was wholly a chemist, a chemist every day of his life, and during the whole of each day. Chevreul entered under this teacher, and soon distinguished himself so much that he was allowed to take charge of the laboratory when twenty years of age. At the same time he taught at the Collège Charlemagne; four years later he was appointed Demonstrator to the Museum, and at thirty was appointed special Professor of Chemistry in charge of the dyeing department at the Gobelins. One of his earliest discoveries was that of margarine, oleine, and stearine in oils and fats. The last of these furnishes stearic acid, and thus an important industry like that in stearic candles was founded. His studies in fatty bodies, and his theory of saponification (1823) have not only created new industries, but they opened immense horizons in organic chemistry. Between 1828 and 1864 he studied colours, and from time to time published memoirs on the progress of his work. In 1826 he took his seat in the Academy of Sciences, and in 1830 he was appointed Director of the Museum of Natural History. His life now is spent between this institution, the Gobelins, and the Institute of France. He never fails to attend the Monday meetings of the Academy of Sciences. The number of his papers, memoirs, &c., is very great. Amongst them is one written in 1832, on the divining-rod, and another in 1853, in which he dissipated the mystery surrounding table-turning and similar manifestations. M. Chevreul remained in Paris during the siege of 1870–71, working steadily in his laboratory. It was soon after this that an expression in a letter he wrote to a friend led to the honourable title of "Doyen des étudiants de France" being affixed to his name. Although he possesses a large fortune, he still carries on his work at the institutions with which he is connected, and prosecutes his experiments with a juvenile lightness of touch. He is exceedingly temperate, drinking nothing but water or beer, but his longevity is not due to this; he owes it to a robust constitution and to a life wisely ordered, regular, and laborious. "It is," concludes M. Tissandier, "a great and beautiful sight presented by this centenarian, who, like an old oak, shelters under his shadow successive generations. Deaf to the sounds of this world, he has chosen to work alone in his laboratory, where his ever-wakeful intelligence is unceasingly attracted to the rays of eternal truth."

In reply to a question from Sir John Lubbock, Mr. Ritchie, the President of the Local Government Board, stated last week that considerable progress had been made by the Committee appointed last session to inquire and report on the subject of M. Pasteur's researches with reference to the prevention of hydrophobia. A sub-Committee visited Paris and had several long interviews with M. Pasteur, who explained to the members most fully and unreservedly the whole details of his treatment. The Committee examined a large number of the persons who had undergone treatment, and so far as this investigation is concerned, the Committee were fully satisfied that M. Pasteur's treatment had been effective. They hope before long to be in a position to report the results of their investigation to the Local Government Board, but before doing so they are anxious that time should be allowed for the Committee to ascertain that experiments on animals conducted on behalf of the Committee have yielded the same results as those detailed and demonstrated to them by M. Pasteur.

We regret to announce the death of Dr. James G. Wakley, editor of the *Lancet*, at his residence, Heathlands Park, Longcross, near Chertsey, on August 30. He was the youngest son of the late Thomas Wakley, founder of the *Lancet*, Member of

Parliament for Finsbury, and coroner for Middlesex. He became a member of the Royal College of Surgeons of England in 1849, and graduated Doctor of Medicine at King's College, Aberdeen, in 1852. At his father's death in 1862 he became editor of the *Lancet*, the duties of which position he discharged for nearly twenty-five years, continuing, in spite of much recent suffering, active in his work up to last Easter.

THE death is announced from Paris of M. Laguerre, Professor of Mathematical Physics in the College of France, and a distinguished mathematician, at the age of fifty-two. In his earlier years he was an officer in the artillery. He wrote and published in the *Proceedings* of various learned Societies numerous mathematical papers, but he never published a volume.

THE annual Pharmaceutical Congress commenced its sittings at the Mason College, Birmingham, on the 31st ult., under the presidency of Mr. Greenish, of London.

ON Friday, August 27, about midnight, an earthquake was felt all over the Levant, and as far to the west as Malta. At Alexandria the shock was felt fifteen minutes after midnight; its apparent direction was from west to east; at Athens a severe shock was felt about the same time. Its force was greatest and most destructive in Greece and the Ionian Islands. In the South-Western Peloponnesus, and particularly in the department of Messenia, towns and villages were destroyed. The towns of Filiatra and Gargaliano and Marathoupolis were laid in ruins, and Kyparassi and Choremi in Arcadia are similarly destroyed. The Eparch has, in consequence of the destruction of the houses, had to telegraph for tents for the people. Over 120 persons were killed, and a large number injured. The Greek Government has despatched four war-vessels with necessaries to relieve the inabitants. From Zante comes news that all the houses in Pyrgos have been destroyed. The shock was felt also in Zante, not a house having escaped damage, although no loss of life has occurred. Strong shocks were felt all over Greece. Some indications of the nature of the weather prior and subsequent to the shock are given by Reuter's Correspondent at Zante. For some time past extraordinary atmospherical disturbances, excessive heat, dead calms, and unusually high tides occurred. At 25 minutes past 11 on Friday night, after a day of heavy and threatening weather, the whole of Zante was racked with a most violent, but steady and undulating, earthquake lasting 15 seconds. The centre of the earthquake, the same correspondent says, was in the sea, 30 miles south-east of Zante, where it smashed the telegraph cable. After the shock the weather was threatening, indicating an approaching storm, and soon after a fearful storm burst over Corfu. Patras and the whole of the Ionian Islands suffered from the earthquake. The position of the centre of this shock is said to indicate some violent volcanic submarine agitation to the south of Zante. The weather after the earthquake remained menacingly heavy, and it was expected that other shocks would follow. At 11 o'clock the same night a shock was felt at Naples. At Brindisi an upheaval movement of the earth, lasting two minutes, was felt, followed by an undulatory movement of about the same duration. There were also two successive prolonged shocks at Foggia, and two undulatory movements at Caserta. At Taranto there were two very sharp shocks, one vertical, the other undulatory, causing great alarm to the inhabitants, who passed the night in the fields for safety. There was however no loss of life nor any serious damage at the places visited by the seismic disturbance. The Governor of Malta also telegraphs to the Colonial Office that a severe earthquake visited the island at 11 o'clock the previous night, causing much alarm, but no serious injury to buildings. No lives were lost. It appears that the correspondent in Alexandria who states that the earthquake appeared to travel from west to east is correct. The wave was first felt at Malta about 11, a little later in Naples (very slight), and in various parts of Calabria, then about midnight in the Ionian Islands, then in Greece, and at fifteen minutes past midnight in Alexandria.

THE Premier of New South Wales has laid before Parliament the proposals of his Government for the celebration of the centenary of that colony in 1888. Amongst others, the New South Wales Government propose inviting the members of the British Association to hold their annual meeting for that year in Sydney, and the Premier stated that he had already communicated with the Association on the importance of the visit. Great stress was laid on the fact that the invitations would be extended to all British Universities, literary, scientific, and art Societies.

WE have received parts 1 and 2 of vol. ix. of the *Transactions* of the Seismological Society of Japan. Prof. Knott discusses the well-worn subject of earthquake frequency, but in a wholly new and original way. His object is to determine the effect of the various causes which are said to influence earthquakes, and his conclusion is that the annual periodicity in earthquake frequency, when it does exist, finds a possible explanation in the annual periodicity of two well-known meteorological phenomena—namely, snow accumulations over continental areas and barometric gradients. No other cause, he says, that can be imagined or named fulfils all the conditions. Mr. Shida describes an automatic current recorder of his own invention. The resolution of the International Electric Congress held in Paris in 1884, that observations of earth-currents should be pursued in all countries was communicated to various Governments, to that of Japan amongst the number. Mr. Shida is Chief Engineer to the Japanese Telegraph Department, and it devolved on him to take the subject up. To this fact, doubtless, we also owe the third paper, which is by the same gentleman, on earth-currents. He describes briefly the work that has been done in the subject in the past, what is being done, and what might be done in Japan. From an examination of the magnetic observations made at the Meteorological Department of Tokio it appears that the declination variations are not the effect of earth-currents, for, if this were so, then an increase of the western declination ought to correspond to a decrease of earth-current flowing from north to south, not an increase, as has been found by actual observation. The results show that both magnetic and earth-current variations are regulated by the same cause or causes, and that the sun plays an important part in producing the effects which are observed. The fact, however, that there appear to be two maxima and two minima in these variations tends to show that they are in part due to the action of the moon. The study of earth-currents, says Mr. Shida, has not advanced *pari passu* with other branches of seismological science, and he desires to establish a system of observation of the currents, and to devise and improve methods of observing. The second part of the *Transactions* contains an elaborate and exhaustive paper (it fills nearly 200 printed octavo pages), by Prof. Milne, on the volcanoes of Japan. It represents the labour and collections of about ten years, and is deserving of special detailed notice. We are glad to observe, from a notice sent with the numbers, that the Japanese *Transactions* of the Society (*i.e.* those written or translated into Japanese) have now reached their third volume. Taken all in all, this Society is by far the most active and thriving of all the learned Societies of the Far East, and we have little doubt that it owes a great part of its vitality to the fact that Japanese men of science are pursuing the work inaugurated by Prof. Milne with the enterprise and ardour of their race.

PRINCE PUTIATIN has presented to the Russian Archæological Society a stone slab which was recently found in the course of some excavations at the Bologne station on the St. Petersburg and Moscow Railway, along with some stone weapons and utensils. A representation of the constellation of the Great Bear was, although rudely, carefully drawn on the slab. It may be remembered that some years ago a similar slab was found near Weimar.

THE additions to the Zoological Society's Gardens during the past week include a White-fronted Capuchin (*Cebus albifrons*) from Central America, presented by Mr. H. A. Blake; a Mississippi Alligator (*Alligator mississippiensis*) from Florida, presented by Miss Janet D. White; a Common Gannet (*Sula bassana*), British, presented by Mr. F. E. Hatfield; two Dominican Kestrels (*Tinnunculus dominicensis*), two Green Bitterns (*Bictorides virescens*), from West India, presented by Dr. A. Boon, F.R.C.S.; a Raven (*Corvus corax*), British, presented by Mr. Robert Galland; a Ring-tailed Coati (*Nasua rufa*), a Globose Curassow (*Crax globicera*), from Central America, a Clouded Iguana (*Cyclura carinata*), from Cuba, deposited; a Black-necked Swan (*Cygnus nigricollis* ♀) from Chili, purchased; a Leopard (*Felis pardus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

NOTES ON VARIABLE STARS.—Mr. T. E. Espin, Observer to the Liverpool Astronomical Society, announces in the Society's *Circular*, No. 6, that the star D.M. + 8°·3780, stated in *Circular* No. 2 (NATURE, vol. xxxiv. p. 110) to be probably variable, passed its maximum about June 4, at which time its magnitude was 6·8. Since this date it has diminished in brightness, and on August 20 it was only 8·2. The star would seem to be a long-period variable. Its place for 1885 is R.A. 18h. 32m. 51s., Decl. + 8° 43'·5. Mr. Espin also states that he has detected variation in the red star D.M. + 47°·3031, which passed a minimum about the end of April. On May 14 it was only 8·9, since which it has increased, and is now 7·7. This star also is a long-period variable. Its place for 1885 is R.A. 20h. 5m. 58s., Decl. + 47° 28'·9. It precedes 32 Cygni by 5m. 57s., and is 9' north of it.

Circular No. 7 states that—(1) The observations of 10 Sagittæ on sixty nights since 1885 November 28 give: Period = 8·32134d., Epoch of Max. 1886 July 17·56d. A minimum occurs on 1886 September 1·6d., and a maximum on 1886 September 5·5d. (2) The star D.M. + 17°·3940 was observed as 9·5 on April 26 last. From this date it increased, and on June 13 it was 8·3. Latterly it has diminished, and on August 20 it was 8·7. Vogel gives the spectrum as III*b*. ! Dunér as III*a*. ! ! The star's place for 1885 is R.A. 19h. 16m. 33s., Decl. + 17° 26'·4.

WINNECKE'S COMET.—From the *Dun Echt Circular*, No. 124, we learn that this periodical comet has been found at Cape Town. It is described as circular, less than 1' in diameter, as bright as a star of the 10th magnitude, and as having some central condensation but no tail. Its observed place was Greenwich M.T. Aug. 20, 5h. 47m. 54s., R.A. 13h. 10m. 21·5s., Decl. 1° 8' 17" S. The daily motion, according to Lamp's ephemerides (*Astronomische Nachrichten*, No 2731) is about *plus* 3·3m. and 32' *south*.

THE OBSERVATORY OF YALE COLLEGE.—The report of the work done at this Observatory during the year ending June 1, 1886, has recently been issued. The chief astronomical work is that done with the heliometer in charge of Dr. W. L. Elkin. With this instrument considerable progress has been made with the triangulation of the Pleiades, completing the series obtained in the previous year. All the stars have now been observed on from ten to twelve nights, and a total of over 1600 measures of distance and 700 of position-angle are available for discussion. The principal observing work accomplished by Dr. Elkin, has, however, been in connection with the scheme for determining the average parallax of the first-magnitude stars as a step towards the more comprehensive plan proposed by Gill and Elkin in concert. It is proposed at present to take the ten brightest stars in the northern hemisphere and observe them each from sixteen to twenty times at epochs of maximum parallactic displacement, using a favourably situated pair of comparison stars—in some cases a double pair, or four stars. Arcturus, with its large proper motion, presents an object of especial interest, and it has been taken up in a more exhaustive manner with six pairs of comparison stars, five of which have been successfully followed up so far. The whole work is progressing satisfactorily, over 200 sets of measures having been made, and is rather more than half completed, the working plan extending until February 1887. Astronomers will await with interest the completion and publication of Dr. Elkin's important researches.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1886 SEPTEMBER 5-11

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on September 5

Sun rises, 5h. 21m.; souths, 11h. 58m. 34·8s.; sets, 18h. 36m.; decl. on meridian, 6° 45' N.: Sidereal Time at Sunset, 17h. 35m.

Moon (at First Quarter) rises, 13h. 38m.; souths, 18h. 11m.; sets, 22h. 41m.; decl. on meridian, 17° 44' S.

Planet		Rises h. m.		Souths h. m.		Sets h. m.		Decl. on meridian ° '
Mercury	...	3 38	...	10 53	...	18 8	...	13 44 N.
Venus ...	...	3 8	...	10 34	...	18 0	...	15 33 N.
Mars ...	...	10 44	...	15 28	...	20 12	...	15 15 S.
Jupiter...	...	7 46	...	13 37	...	19 28	...	2 34 S.
Saturn ..	...	0 23	...	8 27	...	16 31	...	21 42 N.

Occultations of Stars by the Moon (visible at Greenwich)

Sept.		Star		Mag.		Disap. h. m.		Reap. h. m.		Corresponding angles from vertex to right for inverted image ° °
7	...	B.A.C. 6536	...	6½	...	21 43	...	22 33	.	65 353
10	...	B.A.C. 7487	...	6½	...	20 11	...	21 12	...	129 234

Sept.		h.		
7	...	5	...	Mercury at least distance from the Sun.

Variable Stars

Star		R.A. h. m.		Decl. ° '				h. m.	
U Cephei	... ...	0 52·2	...	81 16 N.	...	Sept.	6,	20 6	*m*
						,,	11,	19 46	*m*
Algol	... ...	3 0·8	...	40 31 N.	...	,,	9,	2 0	*m*
						,,	11,	22 49	*m*
ζ Geminorum	...	6 57·4	...	20 44 N.	...	,,	8,	19 24	*m*
δ Libræ	... ...	14 54·9	...	8 4 S.	...	,,	7,	3 3	*m*
U Ophiuchi...	...	17 10·8	...	1 20 N.	...	,,	7,	2 8	*m*
								22 16	*m*
T Herculis ...	...	18 4·8	...	31 0 N.	...	,,	5,		*M*
U Sagittarii...	...	18 25·2	...	19 12 S.	...	,,	8,	0 0	*m*
R Scuti	... ...	18 41·4	...	5 50 N.	...	,,	6,		*m*
β Lyræ...	... ...	18 45·9	...	33 14 N.	...	,,	6,	0 0	*M*
η Aquilæ	... ...	19 46·7	...	0 43 N.	...	,,	6,	0 0	*M*
						,,	10,	19 0	*m*
R Delphini ...	...	20 9·4	...	8 45 N.	...	,,	7,		*M*
T Aquarii	... ...	20 43·9	...	5 34 S.	...	,,	6,		*m*
S Pegasi	... ...	23 14·8	...	8 18 N.	...	,,	5,		*M*

M signifies maximum; *m* minimum.

Meteor Showers

Meteors have been observed at this season from the following radiants:—Near *o* Eridani, R.A. 55°, Decl. 6° S.; from Camelopardus, R.A. 60°, Decl. 60° N.; from near *μ* Persei, R.A. 65°, Decl. 46° N.; from near *μ* Tauri, R.A. 65°, Decl. 6° N.; and near *α* Pegasi, R.A. 345°, Decl. 13° N.

SCIENTIFIC SERIALS

Journal de Physique, July.—Prof. Mascart, on magnetisation. A study of the secondary effect produced by the reaction of the polar surfaces on the magnetising field. The author calculates also the influence of the earth's magnetism in producing temporary alteration in the magnetisation of a needle during oscillation, an effect which he finds to have been often exaggerated, and not to exceed 1/1000 part of the whole magnetisation.—P. Duhem, on the calorific capacity of dissociable gaseous combinations. Discussion and expansion of the formulæ